



DEPARTMENT OF PLANNING & BUILDING

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FORM 4602

SPAN TABLE: ROOF & FLOOR RAFTERS AND JOISTS

MEMBER		CEILING		ROOF						FLOOR	
Size	Spacing	With Drywall Below	With Plaster Below	Roof Rafters Slope > = 4 :12 (Wood Shake, Comp., Asphalt Shingles or built-up roof <u>without</u> gravel) {Max. of 4 psf}	Roof rafters Slope < 4 :12 (Wood Shake, Comp., Asphalt Shingles or built-up roof <u>without</u> gravel) {Max. of 4 psf}	Roof Rafters Slope > = 4 :12 with {Conc.Tile Max. weight of (10 psf)}	Roof Rafters Slope < 4 :12 But not less than 1/4" in 12" { Conc.Tile Max. weight of (10 psf)}	Rafter - Ceiling Joist Combination		Floor Joist	Floor Joist
								Slope > = 4:12 (Wood Shake)	Slope < 4:12 (Wood Shake)		
DFL No. 2	Inch o/c	LL (10 psf) DL (5 psf)	LL (10 psf) DL (10 psf)	With Dry wall LL (16 psf) DL (13 psf)	With Dry wall LL (20 psf) DL (13 psf)	With Dry wall LL (16 psf) DL (19 psf)	With Drywall LL (20 psf) DL (19 psf)	LL (16 psf) DL (15 psf)	LL (20 psf) DL (15 psf)	W/ Drywall LL (40 psf) DL (12 psf)	W/ Plaster Bellow LL (40 psf) DL (20 psf)
2x4	12	10' - 4"	9' - 6"	8' - 4"	8' - 0"	7' -10"	7' - 6"	8' - 3"	7' -10"	6' - 10"	6' - 7"
	16	9' - 6"	8' - 8"	7' - 7"	7' - 4"	7' - 2"	6' - 11"	7' - 6"	7' - 2"	6' - 1"	6' - 0"
	24	8' - 4"	7' - 7"	6' - 8"	6' - 5"	6' - 2"	6' - 0"	6' - 5"	6' -3"	5' - 3"	4' - 11"
2x6	12	16' - 0"	14' - 10"	13' - 0"	12' - 6"	12' - 3"	11' - 9"	12' - 9"	12' -3"	10' - 6"	10' - 0"
	16	14' - 9"	13' - 6"	11' -11"	11' - 5"	11' - 3"	10' - 10"	11' -8"	11' -5"	9' - 5"	8' - 8"
	24	13' - 0"	11' - 11"	10' - 5"	10' - 0"	9' - 10"	9' - 6"	10' - 3"	9' - 11"	7' - 5"	7' - 2"
2x8	12	20' - 11"	19' - 3"	17' - 0"	16' - 5"	16' - 0"	15' - 6"	16' -10"	16' -1"	13' - 2"	12' - 8"
	16	19' - 2"	17' - 7"	15' - 7"	15' - 0"	14' -8"	14' - 2"	15' - 4"	14' - 10"	11' - 7"	11' - 1"
	24	17' - 0"	15' - 5"	13' - 8"	13' - 2"	12' - 11"	12' - 6"	13' - 6"	13' - 0"	9' - 6"	9' - 1"
2x10	12	26' - 4"	24' - 4"	21' - 7"	20' - 10"	20' - 5"	19' - 9"	21' - 4"	20' - 6"	16' - 1"	15' - 6"
	16	24' - 4"	22' - 4"	19' - 10"	19' - 1"	18' - 9"	18' - 1"	19' - 5"	18' - 10"	14' - 0"	13' - 6"
	24	21' - 4"	18' - 7"	17' - 6"	16' - 6"	16' - 0"	15' - 2"	17' - 1"	16' - 10"	11' - 7"	11' - 1"
2x12	12	31' - 6"	29' - 0"	26' - 0"	25' - 1"	24' - 8"	24' - 0"	25' -8"	24' - 10"	18' - 7"	17' - 10"
	16	29' - 1"	25' - 10"	24' - 0"	23' - 0"	22' - 8"	21' - 4"	23' - 6"	22' - 5"	16' - 5"	15' - 7"
	24	24' - 6"	21' - 5"	20' - 2"	19' - 4"	18' - 6"	17' - 6"	19' - 6"	18' -6"	13' - 4"	12' - 10"
2x14	12									20' - 6"	19' - 10"
	16									18' - 0"	17' - 4"
	24									15' - 0"	14' - 4"

Design based on UBC 97 and 91 NDS.
Lumber Grade : D. F Larch NO. 2
Modulus of Elasticity (E) = 1,600,000 psi

Deflection Design Criteria:

Total Load Deflection = L / 240

Live Load Deflection = L / 360

Note: All load factors (Cd, Cr & Ct) have been considered.

(1) Minimum required roof slope 1/4" in 12". Roof surfaces having a slope less than 1/4' in 12" are considered to be flat roofs. Flat roofs must be designed for accommodate potential pounding of water.

NOTE : This information bulletin shall not be used for the design of Flat roofs.

(2) Floor joists bouncing was not considered in design.

TABLE 23-II-E-1-Allowable spans and loads for wood structural panel sheathing and single-floor grades continuous over two or more spans with strength axis perpendicular to supports.^{1, 2}

SHEATHING GRADES		ROOF ³				FLOOR ⁴
Panel Span Rating	Panel Thickness (inches)	Maximum Span (inches)		Load ³ (pounds per square foot)		Maximum Span (inches)
Roof/Floor Span		With Edge Support ⁶	Without Edge Support ⁶	Total Load	Live Load	25.4 for mm
12/0	5/16	12	12	40	30	0
16/0	5/16, 3/8	16	16	40	30	0
20/0	5/16, 3/8	20	20	40	30	0
24/0	3/8, 7/16, 1/2	24	20 ⁷	40	30	0
24/16	7/16, 1/2	24	24	50	40	16
32/16	15/32, 1/2, 5/8	32	28	40	30	16 ⁸
40/20	19/32, 5/8, 3/4, 7/8	40	32	40	30	20 ^{8, 9}
48/24	23/32, 3/4, 7/8	48	36	45	35	24
54/32	7/8, 1	54	40	45	35	32
60/48	7/8, 1, 1 1/8	60	48	45	35	48
SINGLE FLOOR GRADES		ROOF ³				FLOOR ⁴
Panel Span Rating	Panel Thickness (inches)	Maximum Span (inches)		Load ⁵ (pounds per square foot)		Maximum Span (inches)
		With Edge Support ⁶	Without Edge Support ⁶	Total Load	Live Load	25.4 for mm
16 oc	1/2, 19/32, 5/8	24	24	50	40	16 ⁸
20 oc	19/32, 5/8, 3/4	32	32	40	30	20 ^{8, 9}
24 oc	23/32, 3/4	48	36	35	25	24
32 oc	7/8, 1	48	40	50	40	32
48 oc	13/32, 11/8	60	48	50	50	48

¹Applies to panels 24 inches or wider.

²Floor and roof sheathing conforming with this table shall be deemed to meet the design criteria of Section 2312.

³Uniform load deflection limitations 1/180 of span under live load plus dead load, 1/240 under live load only.

⁴Panel edges shall have approved tongue-and-groove joints or shall be supported with blocking unless ¼-inch minimum thickness underlayment or 1½ inches of approved cellular or lightweight concrete is placed over the subfloor, or finish floor is ¾-inch wood strip. Allowable uniform load based on deflection of 1/360 of span is 100 pounds per square foot (psf) except the span rating of 48 inches on center is based on a total load of 65 psf.

⁵Allowable load at maximum span.

⁶Tongue-and-groove edges, panel edge clips (one midway between each support, except two equally spaced between supports 48 inches on center), lumber blocking or other. Only lumber blocking shall satisfy blocked diaphragms requirements.

⁷For ½-inch panel, maximum span shall be 24 inches.

⁸May be 24 inches on center where ¾-inch wood strip flooring is installed at right angles to joist.

⁹May be 24 inches on center for floors where 1½ inches of cellular or lightweight concrete is applied over the panels.

ALLOWABLE SHEATHING SPAN

Sheathing ¹		Maximum Spans	
		ROOF	FLOOR
1" Thick Nominal	Solid	16"	NOT APPLICABLE
	Spaced ²	16"	NOT APPLICABLE
2" Thick Nominal	Supporting Ceiling	5'-6" ³	4'-0"
	No Ceiling	6'-6" ³	4'-0"

FOOTNOTES:

¹Span of sheathing boards placed diagonally across rafters or joists shall be measured along the longitudinal axis of the plank.

²Shall be continuous over three or more supports and no board shall be less than six feet long.

³Douglas Fir larch No. 3 or better permitted.